

SOVIET PHYSICS  
**CRYSTALLOGRAPHY**

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**July 1973—June 1974**

Index

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(Russian original: Kristallografiya, Vol. 18, July 1973–June 1974)

**Analytic subject index to volume 18:**

- 829 1 Communication, education, history, and philosophy
- 829 3 Classical and quantum mechanics
- 829 29 Experimental methods and instrumentation for elementary particle and nuclear physics
- 829 31 Atoms
- 829 32 Molecules
- 829 34 Collision processes and interactions of molecules, atoms, or ions
- 829 35 Macromolecules and polymers
- 830 51 Structure of liquids and solids; crystallography
- 834 52 Mechanical and acoustic properties of condensed matter
- 834 53 Lattice dynamics
- 834 54 Equations of state, phase equilibria, and phase transitions
- 836 55 Thermal properties of condensed matter
- 836 56 Transport properties of condensed matter (nonelectronic)
- 836 58 Surfaces and interfaces; thin films and whiskers
- 837 61 Electron states
- 837 62 Electronic transport in condensed matter
- 837 63 Electronic structure and electrical properties of surfaces, interfaces, and thin films
- 837 65 Magnetic properties and materials
- 837 66 Magnetic resonance and relaxation in condensed matter; Mössbauer effect
- 838 67 Dielectric properties and materials
- 839 68 Optical properties and condensed-matter spectroscopy
- 840 69 Electron and ion emission by liquids and solids; impact phenomena
- 840 71 Optics
- 840 74 Physical chemistry
- 840 75 Materials science and metallurgy
- 842 **Author index to volume 18**

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# SUBJECT INDEX TO VOLUME 18

Papers are arranged in ascending page number order.

## 1. COMMUNICATION, EDUCATION, HISTORY, AND PHILOSOPHY

- Teaching career of a great crystallographer —N. V. Belov. 18(2), 280–1 (Sep. 1973); CPM-7309D1482  
Arkadii Sergeevich Shein (1912–1972) —18(3), 420 (Nov. 1973); CPM-7311E0552

## 3. CLASSICAL AND QUANTUM MECHANICS

- Boundary conditions in the electrodynamics of optically active media —B. V. Bokut', A. N. Serdyukov, F. I. Fedorov, and N. A. Khilo. 18(2), 141–4 (Sep. 1973); CPM-7309D1343

## 29. EXPERIMENTAL METHODS AND INSTRUMENTATION FOR ELEMENTARY PARTICLE AND NUCLEAR PHYSICS

- Monochromatization of neutrons in multiple Bragg scattering —A. A. Loshmanov, V. N. Sigaev, and I. I. Yamzin. 18(4), 530 (Jan. 1974); CPM-7401D0606

## 31. ATOMS

- Laser based on  $\text{Cr}^{3+}$  ions in yttrium-aluminum garnet —B. K. Sevast'yanov, Kh. S. Bagdasarov, L. B. Pasternak, S. Yu. Volkov, and V. P. Orekhova. 18(2), 191–2 (Sep. 1973); CPM-7309D1393

## 32. MOLECULES

### 32.20.- Molecular structure and constants derived from experimental measurements

#### 32.20.B General molecular conformation and symmetry; stereochemistry

- Reflection intensity as a function of temperature during diffraction of slow electrons from (111) and (100) faces of germanium —B. Z. Ol'shanetskii, A. I. Volokitin, and S. M. Repinskii. 18(6), 815–6 (May 1974); CPM-7406X1259

#### 32.20.D Interatomic distances and angles

- X-ray study of potassium copper ethylenediaminetetraacetate trihydrate —M. A. Porai-Koshits, N. V. Novozhilova, T. N. Polynova, T. V. Filippova, and L. I. Martynenko. 18(1), 54–8 (Jul. 1973); CPM-7309D0304  
Crystal and molecular structures of 4-chloroanthraquinonethiadiazole —O. A. Mikhno, Z. I. Ezhkova, and G. S. Zhdanov. 18(1), 59–62 (Jul. 1973); CPM-7309D0309  
Crystal structure of the potassium salt of 1,1-dinitroethane —O. V. Frank-Kamenetskaya, N. V. Grigor'eva, N. V. Margolis, and I. V. Tselinskii. 18(1), 108–9 (Jul. 1973); CPM-7309D0358  
Zn-Mn isomorphism in  $\text{Na}_2\text{ZnGeO}_4$  crystals —I. P. Kuz'mina, A. N. Lobachev, V. M. Vinokurov, N. M. Nizamutdinov, and L. A. Volkova. 18(1), 110–1 (Jul. 1973); CPM-7309D0360  
Crystal structure of the coordination compound bis(pyridinaldehydethiosemicarbazonato)cobalt(III)nitrate —K. N. Akatova, T. N. Tarkhova, and N. V. Belov. 18(2), 162–5 (Sep. 1973); CPM-7309D1364  
Crystal and molecular structures of the 1:2 complex of 1-methyl-3,3-dimethyl-2-(para-n-methyl-n- $\beta$ -chloroethylstyryl)indole and 7,7,8-tetracyanoquinodimethane,  $(\text{C}_{22}\text{H}_{26}\text{N}_2\text{Cl})^+(\text{C}_{12}\text{H}_4\text{N}_4)(\text{C}_{12}\text{H}_4\text{N}_4)$  —R. P. Shibaeva, L. P. Rozenberg, and L. O. Atovmyan. 18(3), 326–9 (Nov. 1973); CPM-7311E0458  
Crystal and molecular structure of phenyl phenoxonium iodide —A. I. Gusev and Yu. T. Struchkov. 18(3), 330–2 (Nov. 1973); CPM-7311E0462

- Crystal structure of 1,6-[Coen<sub>2</sub>Cl<sub>2</sub>]Cl·3SC(NH<sub>2</sub>)<sub>2</sub> —Yu. A. Simonov, L. I. Landa, N. N. Proskina, T. I. Malinovskii, and A. V. Ablov. 18(3), 333–5 (Nov. 1973); CPM-7311E0465  
Crystal structure of coumarin —R. M. Myasnikova, T. S. Davydova, and V. I. Simonov. 18(4), 454–6 (Jan. 1974); CPM-7401D0530  
Crystal-chemical analysis of the structure of 1-I-substituted anthraquinone —N. L. Klimasenko, V. K. Bel'skii, V. K. Sarynin, and G. A. Gol'der. 18(4), 457–9 (Jan. 1974); CPM-7401D0533  
X-ray diffraction study of naphthaloimide —A. N. Sobolev, L. A. Chetkina, G. A. Gol'der, Yu. G. Fedorov, and V. E. Zavodnik. 18(6), 728–31 (May 1974); CPM-7406X1172  
Crystal and molecular structures of octafluoroanthraquinone —L. A. Chetkina and E. G. Popova. 18(6), 732–5 (May 1974); CPM-7406X1176

#### 32.20.G Bond strengths, dissociation energies, hydrogen bonding, molecular core binding energy, etc.

- Structure of calcium-cobalt hexaborate  $\text{K}_2\text{Co}[\text{B}_6\text{O}_7(\text{OH})_6]_2 \cdot 4\text{H}_2\text{O}$  —É. Ya. Silin', Ya. K. Ozol, and A. F. Levin'sh. 18(3), 317–9 (Nov. 1973); CPM-7311E0449  
Proton magnetic resonance investigation of the localization of the protons in the crystal structures  $\text{Na}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$  and  $\text{Li}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$  —G. R. Bulka, V. M. Vinokurov, É. A. Kuz'min, Yu. A. Kharitonov, and N. V. Belov. 18(5), 617–9 (Mar. 1974); CPM-7403D0445

#### 32.20.J Barrier heights (internal rotation, inversion); rotational isomerism

- Atom-atom potentials and the coordinates of hydrogen atoms in methyl groups in the molecule and crystal —K. V. Mirskaya and L. V. Ivanova. 18(1), 101–2 (Jul. 1973); CPM-7309D0351  
Spectroscopy of organic materials in the low-temperature, crystalline phases —G. N. Zhizhin. 18(4), 483–8 (Jan. 1974); CPM-7401D0559

### 32.60.- Molecular spectroscopy (measurement and phenomenology)

- Spectroscopy of organic materials in the low-temperature, crystalline phases —G. N. Zhizhin. 18(4), 483–8 (Jan. 1974); CPM-7401D0559  
Molecular scattering of light in a single crystal of hafnium dioxide —V. I. Aleksandrov, V. F. Kitaeva, I. V. Kozlov, V. V. Osiko, N. N. Sobolev, V. M. Tatarintsev, and I. L. Chisty. 18(5), 682–4 (Mar. 1974); CPM-7403D0510

### 32.90.+ Other topics in molecular physics

- Stable configurations of a biotetrahedral complex with Jahn-Teller centers —I. B. Bersuker, B. G. Vekhter, and M. L. Rafalovich. 18(1), 5–9 (Jul. 1973); CPM-7309D0255  
Reflection intensity as a function of temperature during diffraction of slow electrons from (111) and (100) faces of germanium —B. Z. Ol'shanetskii, A. I. Volokitin, and S. M. Repinskii. 18(6), 815–6 (May 1974); CPM-7406X1259

## 34. COLLISION PROCESSES AND INTERACTIONS OF MOLECULES, ATOMS, OR IONS

- Atomic scattering amplitudes for electrons at small scattering angles —A. N. Pilyankevich. 18(1), 103 (Jul. 1973); CPM-7309D0353

## 35. MACROMOLECULES AND POLYMERS

- Evaluation of the heat effect during alkali halide monomer reorientation in an absorbed layer on a metal —Yu. N. Lyubitov and V. I. Mikhailov. 18(2), 266–7 (Sep. 1973); CPM-7309D1468



Calculation of the small-angle x-ray scattering intensity on a computer using a macromolecule model — Yu. A. Rol'bin, R. L. Kayushina, L. A. Feigin, and B. M. Shchedrin. **18(4)**, 442–4 (Jan. 1974); CPM-7401D0518

## 51. STRUCTURE OF LIQUIDS AND SOLIDS; CRYSTALLOGRAPHY

### 51.10.- Techniques for determination of lattice and defect structures

One-dimensional models of the Patterson function — S. V. Borisov. **18(5)**, 586–8 (Mar. 1974); CPM-7403D0414

Sharpening the peaks of the projection of the Patterson function by regularization — A. I. Kvitashvili, N. P. Zhidkov, B. M. Shchedrin, and A. E. Shvelashvili. **18(5)**, 589–91 (Mar. 1974); CPM-7403D0417

Proton magnetic resonance investigation of the localization of the protons in the crystal structures  $\text{Na}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$  and  $\text{Li}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$  — G. R. Bulka, V. M. Vinokurov, É. A. Kuz'min, Yu. A. Kharitonov, and N. V. Belov. **18(5)**, 617–9 (Mar. 1974); CPM-7403D0445

Statistical values of heavy atom weighted contributions ( $D_H$ ) to the total structure amplitude — L. L. Shadyro and I. D. Feranchuk. **18(6)**, 715–8 (May 1974); CPM-7406X1159

#### 51.10.E Dynamical x-ray diffraction and scattering

Localization of heavy atoms in noncentrosymmetric crystals by single-wave anomalous x-ray scattering — L. L. Shadyro. **18(1)**, 43–5 (Jul. 1973); CPM-7309D0293

X-ray diffraction by a cylindrical cavity in a crystal — A. F. Tsander. **18(2)**, 151–3 (Sep. 1973); CPM-7309D1353

X-ray diffraction in crystals with deformation twins — D. A. Mirzaev and S. V. Rushchits. **18(2)**, 204–6 (Sep. 1973); CPM-7309D1406

Dynamic theory of x-ray diffraction in crystals with modulated electron density — A. V. Kolpakov and Yu. P. Khapachev. **18(3)**, 300–2 (Nov. 1973); CPM-7311E0432

Two-crystal spectrometer study of barium titanate single crystals — I. Ya. Nikiforov and Yu. F. Mal'tsev. **18(3)**, 370–1 (Nov. 1973); CPM-7311E0502

Calculation of the small-angle x-ray scattering intensity on a computer using a macromolecule model — Yu. A. Rol'bin, R. L. Kayushina, L. A. Feigin, and B. M. Shchedrin. **18(4)**, 442–4 (Jan. 1974); CPM-7401D0518

Applicability of Zachariasen's equations to calculations of the integral intensity scattered by a "thick" single crystal in the Bragg symmetry case for any dislocation density — A. V. Kuznetsov. **18(5)**, 592–5 (Mar. 1974); CPM-7403D0420

Studies on ferroelectric crystals with a three-crystal x-ray spectrometer — I. Ya. Nikiforov, Yu. F. Mal'tsev, and V. Z. Borodin. **18(5)**, 638–40 (Mar. 1974); CPM-7403D0466

"Spectral instability" of multiwave diffraction with coplanar x rays — A. D. Fofanov, A. V. Kuznetsov, and G. A. Karacheva. **18(6)**, 711–4 (May 1974); CPM-7406X1155

Polarization and integrated intensity of x rays scattered by silicon crystals — N. M. Olekhovich. **18(6)**, 777–9 (May 1974); CPM-7406X1221

#### 51.10.G Elastic-neutron diffraction and scattering

Monochromatization of neutrons in multiple Bragg scattering — A. A. Loshmanov, V. N. Sigaev, and I. I. Yamzin. **18(4)**, 530 (Jan. 1974); CPM-7401D0606

#### 51.10.N Inelastic-electron diffraction and scattering

Atomic scattering amplitudes for electrons at small scattering angles — A. N. Pilyankevich. **18(1)**, 103 (Jul. 1973); CPM-7309D0353

Allowance for three-wave scattering in electron diffraction by face-centered metals — V. V. Udalova and Z. G. Pinsker. **18(1)**, 136 (Jul. 1973); CPM-7309D0386

New method for determining the normalizing factor in electron diffraction studies of the structure of amorphous substances — Ya. I. Stetsiv. **18(2)**, 158–61 (Sep. 1973); CPM-7309D1360

Effect of accelerating voltage on the intensity of the forbidden reflection 222 Ge in electron diffraction — A. S. Avilov, R. M. Imamov, Z. G. Pinsker, and A. F. Fedotov. **18(4)**, 528–9 (Jan. 1974); CPM-7401D0604

Reflection intensity as a function of temperature during diffraction of slow electrons from (111) and (100) faces of germanium — B. Z. Ol'shanetskii, A. I. Volokitin, and S. M. Repinskii. **18(6)**, 815–6 (May 1974); CPM-7406X1259

### 51.30.+ Liquid crystals

Structure of liquid crystals of the homologous series of n-alkoxyazoxybenzenes — I. G. Chistyakov and V. M. Chaikovskii. **18(2)**, 181–3 (Sep. 1973); CPM-7309D1383

Theory of the electrodynamic effect in liquid crystals — S. A. Pikin and A. A. Shtol'berg. **18(3)**, 283–7 (Nov. 1973); CPM-7311E0415

Phase transition in liquid crystals induced by an electric field — I. G. Chistyakov and L. K. Vistin'. **18(4)**, 552–3 (Jan. 1974); CPM-7401D0628

Pretransition phenomena and optical activity of amorphous liquid phases of cholesteric liquid crystals — E. I. Ryumetsev, A. N. Cherkasov, V. G. Tishchenko, and M. M. Fetisova. **18(5)**, 657–9 (Mar. 1974); CPM-7403D0485

X-ray investigation of some examples of a homologous series of cholesterol ethers in dicarboxylic acid — Ya. I. Dutchak and V. K. Burima. **18(5)**, 677–9 (Mar. 1974); CPM-7403D0505

Determination of the degree of ordering in liquid crystals from the dichroism of dissolved dyes — V. G. Rumyantsev, L. M. Blinov, and V. A. Kizel'. **18(5)**, 695–6 (Mar. 1974); CPM-7403D0523

Oriental order and molecular parameters of liquid crystals with a positive dielectric anisotropy — V. G. Rumyantsev, P. D. Berezin, L. M. Blinov, and I. N. Kompanets. **18(5)**, 697–8 (Mar. 1974); CPM-7403D0525

Reflection intensity as a function of temperature during diffraction of slow electrons from (111) and (100) faces of germanium — B. Z. Ol'shanetskii, A. I. Volokitin, and S. M. Repinskii. **18(6)**, 815–6 (May 1974); CPM-7406X1259

### 51.40.- Amorphous and polymeric materials

Structure of liquid crystals of the homologous series of n-alkoxyazoxybenzenes — I. G. Chistyakov and V. M. Chaikovskii. **18(2)**, 181–3 (Sep. 1973); CPM-7309D1383

Electron-diffraction analysis of amorphous films of carbon and boron — Yu. G. Poltavtsev, V. P. Zakharov, and V. M. Pozdnyakova. **18(2)**, 270–1 (Sep. 1973); CPM-7309D1472

Theory of the electrodynamic effect in liquid crystals — S. A. Pikin and A. A. Shtol'berg. **18(3)**, 283–7 (Nov. 1973); CPM-7311E0415

Determination of coordination numbers and mean-square displacements from the radial distribution curve — Ya. I. Stetsiv. **18(3)**, 306–7 (Nov. 1973); CPM-7311E0438

Electron diffraction study of the structure of amorphous germanium telluride and selenide films — Yu. G. Poltavtsev and V. P. Zakharov. **18(3)**, 379–80 (Nov. 1973); CPM-7311E0511

Crystallization of amorphous films of silicon nitride by ionic bombardment followed by annealing — P. V. Pavlov, É. V. Shitova, E. I. Zorin, and N. A. Genkina. **18(3)**, 381–3 (Nov. 1973); CPM-7311E0513

Electron diffraction investigation of  $\text{In}_2\text{S}_3$  films obtained by vacuum deposition — R. B. Shafizade, É. G. Éfendiev, and F. I. Aliev. **18(3)**, 417–8 (Nov. 1973); CPM-7311E0549

Change in the structure of germanium and silicon during ion bombardment and subsequent annealing — P. V. Pavlov. **18(4)**, 506–9 (Jan. 1974); CPM-7401D0582

Structure of amorphous indium monochalcogenide films — Yu. G. Poltavtsev, V. P. Zakharov, and T. V. Remizovich. **18(5)**, 701–2 (Mar. 1974); CPM-7403D0529

### 51.50.- Crystalline state (including molecular rotation in solids)

Dislocation mechanism of growth with a low kink density — V. V. Voronkov. **18(1)**, 19–23 (Jul. 1973); CPM-7309D0269

Internal stresses developing during crystal growth under a steady-state regime — V. L. Indenbom, I. S. Zhitomirskii, and T. S. Chebanova. **18(1)**, 24–32 (Jul. 1973); CPM-7309D0274

Systematic analysis of Patterson functions on the basis of crystal symmetry. IV. Interpretation of the Patterson synthesis for crystals of lower systems — É. A. Kuz'min, V. P. Golovachev, V. V. Ilyukhin, and N. V. Belov. **18(1)**, 33–8 (Jul. 1973); CPM-7309D0283

Localization of heavy atoms in noncentrosymmetric crystals by single-wave anomalous x-ray scattering — L. L. Shadyro. **18(1)**, 43–5 (Jul. 1973); CPM-7309D0293



- Refining the structure of crystals allowing for the anisotropy of the thermal vibrations of the atoms —L. A. Muradyan and V. I. Simonov. **18**(1), 46–9 (Jul. 1973); CPM-7309D0296
- Statistical model of multiphase anisotropic crystallization —V. F. Dorfman. **18**(1), 93–8 (Jul. 1973); CPM-7309D0343
- Stereographic projections of surfaces for the physical properties of crystals —Sh. M. Butabaev and Yu. I. Sirotn. **18**(1), 121–2 (Jul. 1973); CPM-7309D0371
- Kinetics of motion of steps and rows of steps at smeared phase boundaries —D. E. Temkin. **18**(2), 145–50 (Sep. 1973); CPM-7309D1347
- Structure-localizing sections of the duplicated Patterson function —V. N. Biyushkin. **18**(2), 154–7 (Sep. 1973); CPM-7309D1356
- Proposed method for determining the coordinates of resonant nuclei using polarized Mössbauer spectroscopy —M. A. Andreeva and R. N. Kuz'min. **18**(2), 254–5 (Sep. 1973); CPM-7309D1456
- Iteration method for calculating the intensity distribution in structural analysis —D. K. Khakimova, V. G. Nagornyi, and A. A. Smol'yaninov. **18**(3), 303–5 (Nov. 1973); CPM-7311E0435
- Use of the methods of successive experiment planning with refining crystal-structure parameters —I. V. Igonina, B. I. Pokrovskii, A. K. Gapeev, P. I. Lazarev, and L. N. Komissarova. **18**(3), 308–13 (Nov. 1973); CPM-7311E0440
- Sections of paired Patterson functions —V. N. Biyushkin and N. V. Belov. **18**(3), 311–3 (Nov. 1973)
- Symmetries of functions for separating structures from a Patterson distribution of the triclinic, monoclinic, and orthorhombic systems —O. V. Frank-Kamenetskaya, N. V. Grigor'eva, and N. V. Margolis. **18**(3), 314–6 (Nov. 1973); CPM-7311E0446
- Checking the cited mean parameters of oxide unit cells with the perovskite type structure —E. G. Fesenko and G. A. Geguzina. **18**(3), 336–8 (Nov. 1973); CPM-7311E0468
- Laser detection of acentricity in crystals —V. D. Shigorin and G. P. Shipulo. **18**(3), 349–50 (Nov. 1973); CPM-7311E0481
- Types of vector-localizing sections of the duplicated Patterson function —V. N. Biyushkin and N. V. Belov. **18**(3), 386–7 (Nov. 1973); CPM-7311E0518
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## 51.70.- Defects in crystals

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### 51.70.F Interstitials and vacancies

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- Mechanical stability of small-angle growth boundaries in NaCl crystals —E. L. Pishchik and E. P. Kostyukova. **18(3)**, 414–5 (Nov. 1973); CPM-7311E0546
- Temperature dependence of the rate of enlargement of the twinning layer in calcite crystals —V. P. Soldatov, V. I. Startsev, and N. M. Chaikovskaya. **18(5)**, 641–3 (Mar. 1974); CPM-7403D0469

### 51.70.R Crystal impurities, general

- Nature of the impurity water in synthetic quartz crystals —L. I. Tsinober and V. E. Khadzhi. **18(5)**, 699–700 (Mar. 1974); CPM-7403D0527

### 51.70.T Doping methods and implantation

- Alloying of epitaxial silicon layers with phosphorus and arsenic in a vacuum —V. A. Tolomasov, L. N. Abrosimova, T. N. Sergivskaya, and T. M. Zotova. **18(4)**, 558–9 (Jan. 1974); CPM-7401D0634

### 51.70.W Impurity concentration, distribution, and gradients

- Distribution coefficients of divalent impurities in alkali halide crystals —O. L. Kreinin and K. M. Rozin. **18(2)**, 276–7 (Sep. 1973); CPM-7309D1478



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### 51.80.D X- and $\gamma$ -rays

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### 51.80.P Ion implantation

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## 52. MECHANICAL AND ACOUSTIC PROPERTIES OF CONDENSED MATTER

### 52.20.- Mechanical properties of solids

#### 52.20.D Elasticity

Elastic properties of KDP and DKDP crystals of high temperatures —S. I. Chizhikov, N. G. Sorokin, I. Yu. Ledovskaya, and E. V. Makarevskaya. **18(4)**, 544–5 (Jan. 1974); CPM-7401D0620

#### 52.20.F Deformation and plasticity, including yield, ductility, and superplasticity

Focused laser-beam damage mechanism for CsI crystals —L. M. Belyaev, V. V. Nabatov, V. N. Rozhanskii, N. L. Sizova, and A. A. Urosovskaya. **18(2)**, 207–8 (Sep. 1973); CPM-7309D1409

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### 52.90.+ Other topics in mechanical and acoustical properties of condensed matter

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## 53. LATTICE DYNAMICS

### 53.20.- Phonons and vibrations in crystal lattices

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### 53.70.- Thermal and statistical properties of lattices

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## 54. EQUATIONS OF STATE, PHASE EQUILIBRIA, AND PHASE TRANSITIONS

### 54.50.+ Phase equilibrium diagrams

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## 54.80.- Other phase properties of systems

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## 54.80.C Solubility, segregation, and mixing

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## 54.80.E Stoichiometry and homogeneity

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## 55. THERMAL PROPERTIES OF CONDENSED MATTER

### 55.40.- Heat capacities of solids

- Thermal properties of ammonium fluoroberyllate crystals over a wide temperature range —B. A. Strukov, T. L. Skomorokhova, V. A. Koptsik, A. A. Boiko, and A. N. Izrailenko. **18**(1), 86–8 (Jul. 1973); CPM-7309D0336
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## 56. TRANSPORT PROPERTIES OF CONDENSED MATTER (NONELECTRONIC)

- Study of liquid inclusions in a rocksalt crystal over the entire temperature range of their existence —Ya. E. Geguzin and A. S. Dzyuba. **18**(4), 510–3 (Jan. 1974); CPM-7401D0586
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## 58. SURFACES AND INTERFACES; THIN FILMS AND WHISKERS

### 58.20.- Structure of surfaces and interfaces

#### 58.20.D LEED

- Investigation of the pure and cesium-coated (100) surface of germanium by slow-electron diffraction —A. Yu. Mityagin and V. P. Orlov. **18**(4), 554–5 (Jan. 1974); CPM-7401D0630

#### 58.20.F Texture

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- Structure of thin lead telluride films —E. V. Rakova and S. A. Semiletov. **18**(6), 797–9 (May 1974); CPM-7406X1241

### 58.35.+ Mechanical and acoustic properties of surfaces and interfaces

- Internal friction and strength of germanium whiskers —V. S. Postnikov, S. A. Ammer, and A. I. Drozhzhin. **18**(3), 416 (Nov. 1973); CPM-7311E0548
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- Kinetics of the polishing and etching of sodium chloride crystals. III —G. K. Baranova and E. M. Nadgornyi. **18**(5), 644–6 (Mar. 1974); CPM-7403D0472
- Selective etching at dislocations in metals (Ni) —E. G. Popkova and A. A. Predvoditelev. **18**(5), 647–50 (Mar. 1974); CPM-7403D0475
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- Formation of trigons at the {111} faces of natural diamond during etching —O. N. Grigor'ev. **18**(6), 821–2 (May 1974); CPM-7406X1265

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- Rate of whisker growth by the vapor-liquid-crystal mechanism and the role of surface energy —E. I. Givargizov and A. A. Chernov. **18**(1), 89–92 (Jul. 1973); CPM-7309D0339
- Growth of smooth epitaxial germanium films by the iodide method in a through-flow system with diffusive mass transfer —G. M. Malkin, V. E. Grigor'ev, N. A. Lineva, and L. A. Malkina. **18**(1), 129–30 (Jul. 1973); CPM-7309D0379
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## 61. ELECTRON STATES

### 61.50.- Level splitting and interactions

#### 61.50.C Crystal and ligand fields

Calculation of the energy matrices for  $d^n$  configurations in intracrystalline fields with  $T(n=2,3,7,8)$  symmetry —E. F. Kustov. **18(1)**, 15–8 (Jul. 1973); CPM-7309D0265

Absorption spectra of  $MgWO_4$  crystals activated with  $Cr^{3+}$  and  $Co^{2+}$  ions —O. N. Boksha and T. M. Varina. **18(3)**, 354–7 (Nov. 1973); CPM-7311E0486

#### 61.50.E Spin-orbit coupling, Zeeman, Stark, and strain splitting

Stable configurations of a biotetrahedral complex with Jahn-Teller centers —I. B. Bersuker, B. G. Vekhter, and M. L. Rafalovich. **18(1)**, 5–9 (Jul. 1973); CPM-7309D0255

#### 61.50.J Nuclear states and interactions

Proposed method for determining the coordinates of resonant nuclei using polarized Mössbauer spectroscopy —M. A. Andreeva and R. N. Kuz'min. **18(2)**, 254–5 (Sep. 1973); CPM-7309D1456

Magnetically nonequivalent cation positions in substituted ferrite garnets —I. S. Lyubutin, A. P. Dodokin, and L. M. Belyaev. **18(5)**, 623–6 (Mar. 1974); CPM-7403D0451

## 62. ELECTRONIC TRANSPORT IN CONDENSED MATTER

Some features of the action of penetrating radiation on the electrical properties of a quartz crystal —A. A. Fotchenkov and S. V. Kolodieva. **18(3)**, 366–9 (Nov. 1973); CPM-7311E0498

Electronic mechanism of the influence of radiation on the process of repolarization of ferroelectrics —A. A. Grekov, M. A. Malitskaya, and V. M. Fridkin. **18(4)**, 494–8 (Jan. 1974); CPM-7401D0570

## 63. ELECTRONIC STRUCTURE AND ELECTRICAL PROPERTIES OF SURFACES, INTERFACES, AND THIN FILMS

### 63.20.- Electronic surface states

Evaluation of the heat effect during alkali halide monomer reorientation in an adsorbed layer on a metal —Yu. N. Lyubutov and V. I. Mikhailov. **18(2)**, 266–7 (Sep. 1973); CPM-7309D1468

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### 63.90.+ Other topics in electrical properties of surfaces, interfaces, and thin films

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## 65. MAGNETIC PROPERTIES AND MATERIALS

### 65.30.- Magnetically ordered materials, intrinsic properties

Antiferromagnets with electric polarization —O. V. Kovalev. **18(2)**, 137–40 (Sep. 1973); CPM-7309D1339

Preparation of mixed single crystals of (Cr, Te) —É. A. Zavadskii and B. Ya. Sinel'nikov. **18(3)**, 419 (Nov. 1973); CPM-7311E0551

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### 65.90.+ Other topics in magnetic properties and materials

Block conical ferromagnetic spiral in the hexagonal ferrite  $BaGa_2Sc_{12}Fe_{88}O_{19}$  (M) —O. P. Aleshko-Ozhevskii, V. P. Cheparin, A. P. Cherkasov, and I. I. Yamzin. **18(3)**, 393–4 (Nov. 1973); CPM-7311E0525

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## 66. MAGNETIC RESONANCE AND RELAXATION IN CONDENSED MATTER; MOSSBAUER EFFECT

### 66.80.+ Mossbauer effect; other $\gamma$ -ray spectroscopy

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## 66.90.+ Other topics in magnetic resonance and relaxation

- Effect of manganese on the transformation of the zinc sulfide cubic lattice to hexagonal —G. E. Arkhangel'skii, T. I. Voznesenskaya, and M. V. Fok. **18**(3), 342–3 (Nov. 1973); CPM-7311E0474
- Proton magnetic resonance investigation of the localization of the protons in the crystal structures  $\text{Na}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$  and  $\text{Li}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$  —G. R. Bulka, V. M. Vinokurov, É. A. Kuz'min, Yu. A. Kharitonov, and N. V. Belov. **18**(5), 617–9 (Mar. 1974); CPM-7403D0445

## 67. DIELECTRIC PROPERTIES AND MATERIALS

### 67.20.+ Permittivity

- Dispersion of the dielectric constant in crystals of  $\text{KH}_2\text{PO}_4$  —L. P. Pereverzeva, Yu. M. Poplavko, V. M. Petrov, E. V. Makarevskaya, and I. S. Rez. **18**(3), 407–8 (Nov. 1973); CPM-7311E0539
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- Thermo-optical and dielectric properties of  $(\text{NH}_4)_2\text{BeF}_4$  in the neighborhood of the ferroelectric transition —A. T. Anistratov and S. V. Mel'nikova. **18**(6), 811–2 (May 1974); CPM-7406X1255

### 67.30.+ Polarization: depolarization effects

- Some features of the polarization of  $\text{KH}_2\text{PO}_4$  in the phase transition region —E. V. Sidnenko and V. V. Gladkii. **18**(1), 83–5 (Jul. 1973); CPM-7309D0333
- Antiferromagnets with electric polarization —O. V. Kovalev. **18**(2), 137–40 (Sep. 1973); CPM-7309D1339
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### 67.40.+ Dielectric loss and relaxation

- The  $\text{PbZrO}_3\text{-SrCu}_{1/3}\text{Nb}_{2/3}$  system —D. F. Dzhmukhadze, M. A. Ugryumova, Yu. N. Venetsev, and G. S. Zhdanov. **18**(1), 116–8 (Jul. 1973); CPM-7309D0366
- Relaxation of phase boundaries in SbSI single crystals —M. D. Volnyanskii, A. Yu. Kudzin, and A. N. Sukhinskii. **18**(2), 202–3 (Sep. 1973); CPM-7309D1404
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### 67.70.+ Pyroelectric and electrocaloric effects

- Dynamic pyroelectric effect —S. D. Pel'ts and A. E. Karpel'son. **18**(3), 360–2 (Nov. 1973); CPM-7311E0492
- Heat effects in lithium metaniobate —I. A. Kleinman, T. A. Lyubimova, A. Z. Rabinovich, and M. B. Roitberg. **18**(4), 546–7 (Jan. 1974); CPM-7401D0622
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### 67.80.- Ferroelectricity and antiferroelectricity

#### 67.80.B Transitions and Curie point

- Effect of an electric field on phase transitions in  $\text{Na}(\text{D}_{x-1}\text{H}_{1-x})_3(\text{SeO}_3)_2$  crystals. I. Induction of the  $\beta$  phase in crystals having  $x \lesssim 0.3$  by the field  $E_y$  —L. A. Shuvalov, A. M. Shirokov, N. R. Ivanov, and A. I. Baranov. **18**(1), 80–2 (Jul. 1973); CPM-7309D0330
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- Solid solutions of  $\text{BaTiO}_3$  with barium niobates —I. N. Groznov and Yu. N. Venetsev. **18**(3), 395–6 (Nov. 1973); CPM-7311E0527
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- $\text{KIO}_3$ : the first ferroelectric permitting just a  $120^\circ$  shift in the ferroelectric polarization —L. A. Shuvalov, N. R. Ivanov, O. A. Chikhladze, and A. N. Izrailenko. **18**(6), 758–61 (May 1974); CPM-7406X1202
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#### 67.80.D Domain structure and effects; hysteresis

- Some characteristics of the vibronic impurity spectra in ferroelectrics —N. N. Kristofel. **18**(1), 10–4 (Jul. 1973); CPM-7309D0260
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- X-ray diffraction and dielectric studies of the  $\text{LiNbO}_3\text{-KNbO}_3$  system —I. G. Ismailzade, V. I. Nesterenko, and É. A. Il'yasov. **18**(1), 114–5 (Jul. 1973); CPM-7309D0364
- Morphology of the domain structure of SbSI crystals —L. A. Zadorzhnaya, V. A. Lyakhovitskaya, and L. M. Belyaev. **18**(3), 363–5 (Nov. 1973); CPM-7311E0495
- Surface tension of  $180^\circ$  domain boundaries and effects in triglycine sulfate and *c*-domain  $\text{BaTiO}_3$  —É. S. Popov and L. A. Shuvalov. **18**(3), 405–6 (Nov. 1973); CPM-7311E0537
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- Secondary effects accompanying movement of  $180^\circ$ -degree  $\alpha$  domains in  $\text{BaTiO}_3$  —E. F. Dudnik and V. M. Duda. **18**(4), 542–3 (Jan. 1974); CPM-7401D0618
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- Phase transition, dielectric anomaly, and domain structure in hydrosodalite —N. R. Ivanov and V. Yu. Galitskii. **18**(6), 762–3 (May 1974); CPM-7406X1206
- Domain boundaries, antiphase boundaries, and dislocations in gadolinium molybdate single crystals —V. A. Meleshina, V. L. Indenbom, Kh. S. Bagdasarov, and T. M. Polkhovskaya. **18**(6), 764–8 (May 1974); CPM-7406X1208
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### 67.90.+ Other topics in dielectric properties and materials

- Thermodielectric effect at the phase transition between a liquid and solid crystal —A. P. Kapustin, Z. Kh. Kuvatov, and A. N. Trofimov. **18**(3), 409 (Nov. 1973); CPM-7311E0541



## 68. OPTICAL PROPERTIES AND CONDENSED-MATTER SPECTROSCOPY

### 68.20.- Optical properties and materials

Interpretation of the dispersion of the rotatory power in the  $\text{LiIO}_3$  crystal —Z. B. Perekalina, N. L. Smirnova, G. F. Dobrzhanskii, and I. A. Shpil'ko. **18**(4), 538-9 (Jan. 1974); CPM-7401D0614

#### 68.20.D Optical constants and parameters

- Optical activity in  $\text{Ba}(\text{NO}_3)_2 \cdot \text{H}_2\text{O}$  crystals —V. I. Burkov, V. A. Kizel', Z. B. Perekalina, N. L. Kozlova, and G. S. Semin. **18**(2), 196-7 (Sep. 1973); CPM-7309D1398
- Dispersion of the optical activity in  $(\text{SrCa})\text{S}_2\text{O}_6 \cdot 4\text{H}_2\text{O}$  mixed crystals —A. Yu. Klimova, Z. B. Perekalina, and L. M. Belyaev. **18**(2), 198-9 (Sep. 1973); CPM-7309D1400
- Growth of  $\text{KIO}_3$ ,  $\text{HIO}_3$  crystals and investigation of some of their physical properties —N. R. Ivanov, A. N. Izrailenko, L. N. Rashkovich, and O. A. Chikhladze. **18**(3), 397-8 (Nov. 1973); CPM-7311E0529
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#### 68.20.F Birefringence (including stress birefringence, flow birefringence, etc.)

- Thermooptical and dielectric properties of  $(\text{NH}_4)_2\text{BeF}_4$  in the neighborhood of the ferroelectric transition —A. T. Anistratov and S. V. Mel'nikova. **18**(6), 811-2 (May 1974); CPM-7406X1255
- Optical activity in monoclinic sodium zincogermanate  $\text{Na}_2\text{ZnGeO}_4$  —S. P. Kozyrev, A. B. Gil'varg, B. N. Grechushnikov, and N. V. Belov. **18**(6), 813 (May 1974); CPM-7406X1257

#### 68.20.H Piezo-, elasto-, and acousto-optical effects

- Characteristics of residual-stress relaxation in  $\text{LiNbO}_3$  single crystals in the 20-200°C region —K. G. Belabaev, V. T. Gabrielyan, and V. Kh. Sarkisov. **18**(1), 123-4 (Jul. 1973); CPM-7309D0373
- Scattering of light at elastic waves in optically biaxial crystals —Yu. V. Pisarevskii and I. M. Sil'vestrova. **18**(5), 630-4 (Mar. 1974); CPM-7403D0458
- Temperature dependence of the elasto-optical constants  $p_{11}$  and  $p_{12}$  of  $\text{NaCl}$ ,  $\text{KCl}$ ,  $\text{KBr}$ , and  $\text{KI}$  crystals —A. V. Pakhnev, S. S. Gorbach, and M. P. Shaskol'skaya. **18**(5), 687 (Mar. 1974); CPM-7403D0515
- Influence of impurities on the photoelastic constants of potassium chloride crystals —M. P. Shaskol'skaya, A. V. Pakhnev, S. S. Gorbach, and N. M. Malikova. **18**(6), 817 (May 1974); CPM-7406X1261

#### 68.20.J Electro-optical effects

- Dynamic scattering with a memory effect in liquid-crystal mixtures —G. S. Chilaya, V. T. Lazareva, and L. M. Blinov. **18**(1), 127-8 (Jul. 1973); CPM-7309D0377
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#### 68.20.L Magneto-optical effects and properties

Jones and Müller matrices of a phase-shifting slab with a rotating axis of the highest velocity —V. D. Tron'ko and G. P. Golovach. **18**(3), 291-4 (Nov. 1973); CPM-7311E0423

### 68.30.- Infrared and Raman spectra and scattering

#### 68.30.G Infrared and Raman spectra in inorganic crystals

- Double cesium-rare earth molybdates of the composition  $\text{Cs}_3\text{Ln}(\text{MoO}_4)_3$  ( $\text{Ln}=\text{La}, \text{Pr}, \text{Nd}$ ) —P. V. Klevtsov, V. A. Vinokurov, and R. F. Klevtsova. **18**(1), 73-5 (Jul. 1973); CPM-7309D0323
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#### 68.30.J Infrared and Raman spectra in organic crystals

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### 68.45.+ Stimulated emission

Stimulated emission from  $(\text{Er}, \text{Lu})\text{AlO}_3$  crystals containing  $\text{Ho}^{3+}$  and  $\text{Tm}^{3+}$  ions —Kh. S. Bagdasarov, A. A. Kaminskii, A. M. Kevorkov, S. É. Sarkisov, and T. A. Tevosyan. **18**(5), 681 (Mar. 1974); CPM-7403D0509

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### 68.60.- Luminescence spectra and radiative recombination

- Absorption spectra of  $\text{MgWO}_4$  crystals activated with  $\text{Cr}^{3+}$  and  $\text{Co}^{2+}$  ions —O. N. Boksha and T. M. Varina. **18**(3), 354-7 (Nov. 1973); CPM-7311E0486
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## 68.70.- Other spectra and interactions between radiation and matter

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### 71.15.+ Propagation and transmission in homogeneous and anisotropic media

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- Laser based on  $\text{Cr}^{3+}$  ions in yttrium-aluminum garnet —B. K. Sevast'yanov, Kh. S. Bagdasarov, L. B. Pasternak, S. Yu. Volkov, and V. P. Orekhova. **18(2)**, 191–2 (Sep. 1973); CPM-7309D1393
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### 71.65.F Harmonic generation

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### 74.30.- Chemical reactions

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### 75.20.- Methods of crystal growth and purification, including film deposition techniques

#### 75.20.F Growth from melts and solutions

- Double cesium-rare earth molybdates of the composition  $\text{Cs}_3\text{Ln}(\text{MoO}_4)_3$  ( $\text{Ln}=\text{La, Pr, Nd}$ ) —P. V. Klevtsov, V. A. Vinokurov, and R. F. Klevtsova. **18(1)**, 73–5 (Jul. 1973); CPM-7309D0323
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